

developers, World Wildlife Fund, Greenpeace, the Sierra Club, the Suzuki Foundation, and other environmental groups, union workers concerned about the loss of jobs, and gas and electric distribution utilities. The mission of the Alliance is to promote clean technology policies to reduce greenhouse gas emissions, to boost the economy, and to buy time for new technologies to improve. Clean technology options that hold great promise include energy recycling, of which CHP is an example. Capturing the exhaust heat from power generation or industrial waste that industries normally throw away has the potential to generate 20% of the United States' electricity.

CHP systems are not more widely used in the United States because industries interested in implementing them face regulatory barriers and interconnection costs and are denied payment for benefits that can be provided such as cleaner technology. This is primarily because the energy generation system has not been updated in several decades. In the United States, 38% of carbon emissions come from electricity generation, whose efficiency peaked 45 years ago. With the system as it is now, electricity received by the end user represents one third of the fuel used to generate it. CHP plants increase efficiency by up to 50%, as they are located on-site and the fuel used to make power results in thermal heat which can be used and distributed. Local generation reduces the need for a central grid and power does not travel long distances which lowers the quantity of electricity lost through power lines. Local generation also stabilizes voltages and reduces vulnerability to extreme weather and terrorism.

In terms of the cost, the up front costs for building local plants are greater than for central generation, however connecting to a grid requires payments for generation and distribution. Denmark pushes for local generation, and with 52% of the country's power generated locally, it is approaching 60% efficiency. Other countries that have already implemented CHP at around 20% of their total electric generation include Portugal, China, Japan, Poland and Germany. In order to encourage implementation of CHP and energy recycling, distribution utilities should be required to interconnect those who qualify as clean technology and include the costs in their base rate, as they provide a public benefit. Regulations should also be changed to address utility bias towards central generation. And finally, there should be incentives for industries to recycle energy, as there are risks involved in the initial phases of implementation. About half of the states in the U.S. have eliminated these barriers, and some states, such as Connecticut, New York, and California are moving towards eliminating standby and interconnection charges.

Mr. Casten's presentation is available online at the following link: [Thomas R. Casten, Founder and Chair, Alliance for Clean Technology and founder and former Chief Executive Officer of Trigen Energy and Primary Energy Ventures](#)

*Raymond DuBose, the Director of the Energy Services Department at the University of North Carolina at Chapel Hill, gave a presentation on the award-winning energy facilities located on the University campus. The campus facility is composed of a CHP facility which simultaneously generates steam and electricity and distributes thermal and electrical energy throughout the system – a central chilled water system – and central plants and underground systems for the production and distribution of steam. These campus facilities generate a third of the power used on campus, and the remaining two thirds are purchased from Duke Energy. The thermal*